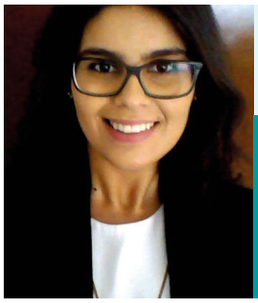

POSTER

Development of a sustainable bioprocess for the production of novel Xylooligosaccharides (XOS) and their potential application

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Abstract

The growing demand of novel food products for well-being and age related issues coupled with increasing health care expenditure has attracted global attention on prebiotics. Xylooligosaccarides (XOS) are the only nutraceuticals that can be produced from lignocellulosic biomass. Indeed, XOS can be produced from agricultural crop residues, which is encouraging to the food ingredient industries, as these raw materials are inexpensive, abundant and renewable in nature. XOS beneficial effects include, besides the selective growth stimulation of beneficial gut microflora, enhanced mineral absorption, cholesterol lowering, glucose homeostasis, pathogen exclusion, immune modulation, antioxidant and anticarcinogenic activities, among others. The precursor for XOS is xylan. Xylan is the polysaccharide accounting for 25 to 50% of the dry mass of lignocellulosic-based agriculture residues. XOS can then be produced through chemical or enzymatic processes. The microbial or enzymatic conversion of xylan into value-added useful products, as XOS, holds a great promise for the use of a variety of agro-food and industrial residues. The goal of this PhD project is to develop a sustainable bioprocess by exploring the use of agro-industrial residues for the production of novel XOS and to evaluate their effect on the probiotics viability under simulated gastric conditions. The proposed tasks involve several design and engineering approaches to optimize the production process.